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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,584	03/28/2001	Narutoshi Fukuzawa	P107424-00024	3657

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EXAMINER

ANGEBRANDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/818,584	FUKUZAWA, NARUTOSHI	
	Examiner	Art Unit	
	Martin J Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/13/2004 and.
- 2a) ☐ This action is **FINAL**.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some * c) ☐ None of:
 - 1. ☒ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. The response provided by the applicant has been read and given careful consideration. Rejections of the previous office action, not repeated below are withdrawn based upon the arguments and amendment of the applicant. Prosecution is reopened in response to the RCE filing of Mat 13/ 2004.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usami et al. '122, in view of Yanagimachi et al. JP 10-011799.

Usami et al. '122 teach optical recording media, which have, grooves of depths of most preferably 150-200 nm, widths of 200-900 nm (0.2-0.9 microns) and a pitch of 0.3 to 0.9 microns. (6/5-18) The use of various dyes including cyanine and azo dyes is disclosed (6/19-34 and examples) The use of silver reflective layers and methods for making them including sputtering and ion plating is disclosed. (7/23-36). The formation of protective layer on these is also disclosed. (7/37-64). Example 2 uses a groove pitch of 0.74 microns, a depth of 150 nm and a width at half height of 300 nm, which is coated with a cyanine dye containing recording layer, uses DC magnetron sputtering to produce the silver film and a UV overcoat layer. The examiner notes that figure 1 of the instant specification shows the groove widths measured at half height.

Yanagimachi et al. JP 10-011799 in example 1, teaches the coating of a phthalocyanine dyes containing recording layer with a silver reflective layer formed by DC magnetron sputtering at 5 mTorr (0.67 Pa) and a power of 5kW, followed by a UV cured protective layer and has a

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grain size of 52 nm.[0028] The addition of azo or cyanine dyes to the recording layer is disclosed. [0013]. The reduction of the crystal grain diameter is disclosed as desirable, particularly within the range of 30 to 50 nm to achieve high reflectivity with good moisture and heat resistance [0019-0020]. The crystal grain size is reduced as the sputtering power is increased and the gas pressure is reduced [0022]. The addition of metals in amounts of 0.1-5% , including In, Rh, Pd, Pt, Ti, Mo, Ta, Zr, Va, W, Cu, Zn, and Ni is disclosed [0022].

Usami et al. '122 teach the invention as claimed, except that the properties of the reflective layer and the sputtering conditions are not disclosed. It would have been obvious to one skilled in the art to use the sputtering conditions of Yanagimachi et al. JP 10-011799 when performing the DC magnetron sputtering process forming the silver film in the process of Usami et al. '122 with a reasonable expectation of gaining benefits of high reflectivity and moisture resistance ascribed to the reflective layer by Yanagimachi et al. JP 10-011799.

The instant specification indicates that reduced gas pressures during sputtering and increased sputtering power yield higher (200)/(111) ratios. The pressure in example 6 in table 1 of the specification is 0.14 Pa higher, but 2 kW lower and has a (200)/(111) of 0.49. In examples 1,2&3 of the table 1 of the specification, the pressure is held constant and the power is increased by 2kW, which yields an increase of 0.04 in the ratio of (200)/(111). Based upon the analysis, the examiner holds that the (200)/(111) is in excess of 0.49. The best guess might be ~0.52-0.54, noting the higher increase when the power is increased between 3 and 4 kW, rather than between 2 and 3 kW.

The Declaration asserts that there is no correlation between crystallite size and the ratio of $I(200)/I(111)$. Clearly over the entire range of data shown, there is no linearly related inverse

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relationship, but the last data (comparative) point is well outside the range of the other three (inventive) points and therefore is of less probative value. As pointed out, the instant specification indicates that reduced gas pressures during sputtering and increased sputtering power yield higher (200)/(111) ratios. Example 6 is the transition point in the examples of the instant specification. Example 6 in table 1 of the specification is 0.14 Pa lower, but 2 kW higher than the example of Yanagimachi et al. JP 10-011799 and has a (200)/(111) of 0.49. If the sputtering power had no effect (but is disclosed as having an effect in the instant specification based upon analysis of the data), then the piecemeal analysis in the declaration would be correct and the $I(200)/I(111)$ would be slightly below 0.49, but the sputtering power is shown in the analysis of table 1 the effects of a 2kW power increase is approximately 0.04 which the examiner asserts overcomes the effects of the pressure increase relative to example 6. The declaration fails to address the effects of sputtering power and the examiner notes that increasing the sputtering power is disclosed in the reference as desirable [0022]. The analysis by the applicant's representative also fails to acknowledge the effects of sputtering power. The examiner also notes that to sputter, power must be applied, and therefore ignoring this implicit and unrecited limitation to the claims fails to address the issue. The declaration adds nothing to the record and fails to provide data concerning the relationship between the sputtering power and the $I(200)/I(111)$. The rejection stands.

The applicant argues a reference not applied in a rejection and as such the position cannot be held to obviate the rejections of record, which include over Usami et al. '122 which specifically describe both CD-R and DVD-R and the higher density of DVD-R. The benefit of

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the higher reflectivity is also one which would be desirable in either format. The rejection stands.

4. Claims 1,2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usami et al. '122, in view of Yanagimachi et al. JP 10-011799 and Nee '402.

Nee '402 describes in example 11, sputtering conditions useful as 1000 W at pressures of 1-3 mTorr (0.13-0.39 Pa). Example 1 sputters an AgPd alloy containing 8-10% Pd. The addition of 0.1-15% Pd in an AgPd alloy is disclosed (7/12-20). The combination of AgPdCu is disclosed. (8/15-34)

It would have been obvious to one skilled in the art to modify the combination of Usami et al. '122 and Yanagimachi et al. JP 10-011799 discussed above by using reduced pressures, such as 2-3 mTorr (0.26-0.39 Pa) taught by Nee '402 to further reduce the grain sizes within the preferred range of 30-50 nm [0019] based in part upon the disclosure that reducing the pressure leads to decreased crystal sizes [0022].

The rejection stands for the reasons above without further comment as no further arguments were directed at this rejection.

5 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

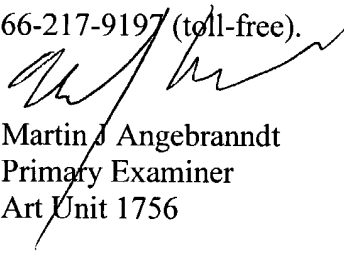
Sekiya et al. '078 teach the formation of a silver layer at a pressure of 5 mtorr (0.67 Pa) and a power of 100 W. (9/33-41).

Hijikata et al. '947 teach the formation of a silver layer at a pressure of 1 mtorr (0.13 Pa) and a power of 200 W. (9/5-37).

6 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J Angebrannndt
Primary Examiner
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07/07/2004